

POLICY POSITION ON CO₂ EMISSIONS POST 2020



Executive Summary

Targets are useful tools to provide incentives for research and development with appropriate vehicle testing. FIA Region I believes that there is a need for a staged approach to improving vehicles' energy efficiency on the road and therefore calls on decision makers to:

Short-term:

- Implement the World-harmonised Light-duty vehicle Test Cycle (WLTC) in 2017
- Introduce CO₂ emission and fuel or energy consumption measurements under real-world driving conditions in RDE by 2020

Mid-term:

- Set an ambitious CO₂ fleet reduction target and a Not-To-Exceed CO₂ target for the individual vehicle family by 2025, based on the latest available evidence
- Amend the vehicle labelling Directive to provide consumers with more realistic fuel consumption data

Long-term:

- Start an in-depth reflection on vehicle fleet mass reduction; if necessary, a dedicated target for continuous mass reduction should be considered. Further CO₂ targets should become mass neutral from 2025 onwards to incentivise mass reduction
- Enlarge the Real Driving Emissions (RDE) boundary conditions to ensure that vehicles' propulsion units are clean and energy efficient in all feasible engine speed & engine load conditions

Background

Fuel efficiency represents a unique selling point for European vehicles worldwide, thus supporting automotive technology exports. European vehicles have been a benchmark for the rest of the world in setting fuel efficiency standards. Additionally, the setting of efficiency standards has not lead to adverse effects for the industry, neither in terms of competition nor in terms of revenue.

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Fuel efficiency improvements can be achieved by further optimising powertrain efficiency (e.g. downsizing), but even more so through a significant reduction of vehicle mass (down-weighting)¹ in the mid- to long- run. FIA Region I and its Clubs acknowledge that Intelligent Transport System (ITS) technologies and improved driver skills have an important role to play in delivering overall reductions in transport CO₂; they will therefore continue to supplement vehicle technology improvements. However, these measures should only complement vehicle regulations.

Lowering the EU fleet vehicle mass could greatly reduce CO₂ emissions and fuel consumption in real world conditions, without compromising safety

The current system of mass-based CO₂ targets creates little incentive to reduce vehicle mass. Average mass has actually significantly increased over the past decade. Lowering the EU fleet vehicle mass could greatly reduce CO₂ emissions and fuel consumption in real world conditions, without compromising safety.

Vehicles with all types of propulsion units, be it combustion engine or electrified powertrains alike, would benefit from a significant vehicle mass reduction with respect to improving fuel efficiency and reducing greenhouse gases.

Recent developments show that efficiency gains of the vehicle's powertrain are not always delivered on the road, but often only in laboratory tests. This undermines the efficiency of the regulatory system to the extent that it is difficult to quantify the actual improvements delivered to date. Consumers notice a widening gap between fuel consumption and their experience on the road and are becoming more concerned about the same effect on tailpipe emissions. We therefore need to set the record straight and start anew.

Consumers notice a widening gap between fuel consumption and their experience on the road

¹ http://ec.europa.eu/clima/policies/transport/vehicles/docs/ldv_downweighting_CO2_report_en.pdf

FIA Region I Position

Short-term (2017 – 2021)

Comprehensive testing methodologies are equally as important as setting fleet performance targets when it comes to reducing transport emissions. The World Light Test Cycle will become mandatory as of September 2017 for new vehicle types, and should yield more credible results than the New European Driving Cycle (NEDC). There is currently no plan to start measuring greenhouse gases and fuel or energy consumption under real-world conditions.

FIA region I calls on the legislators to:

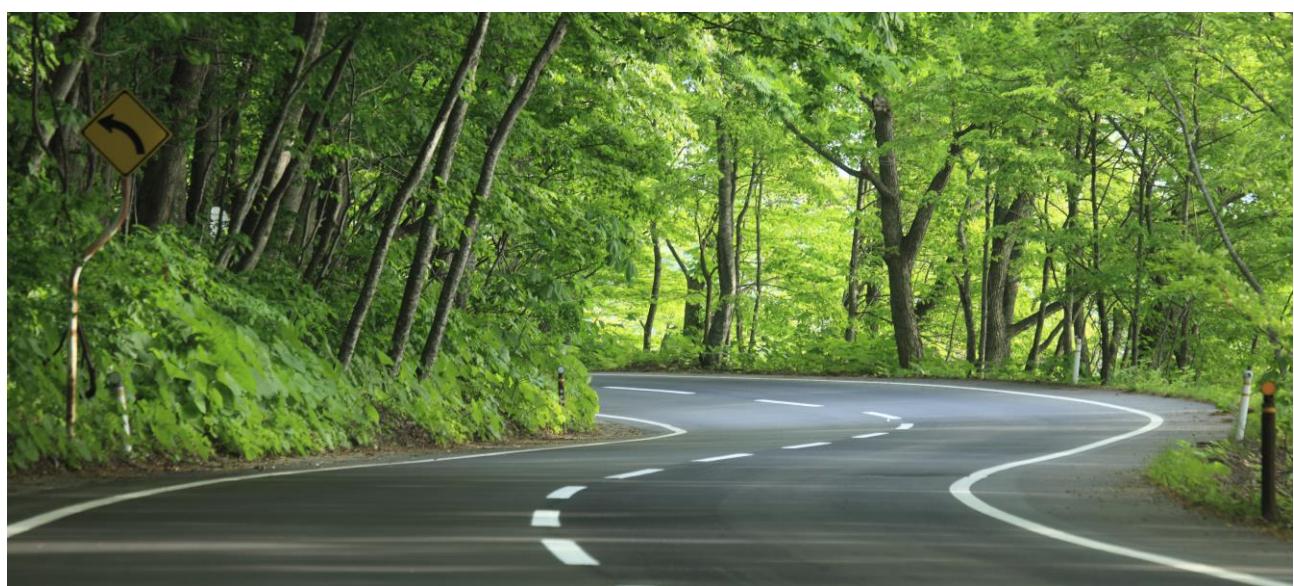
- Implement WLTC by 2017 without any further delay
- Introduce CO₂ emission and fuel or energy consumption measurements under real-world driving conditions in RDE by 2020. The test procedure should be amended to allow measuring CO₂ emissions and fuel consumption in the shortest delays possible to ensure planning security for authorities, test houses, the industry and NGOs

Mid-term (2021 – 2030)

Real Driving Emissions testing is a first step toward more representative vehicle testing. However, RDE test results are also ‘normalised’ in order to reproduce the WLTC engine speed & engine load conditions and to avoid testing of ‘excessive’ driving situations.

Measuring emissions on the road under ‘normal’ WLTC driving conditions is an important step to come closer to what consumers experience. Nevertheless, Real Driving Emissions testing will also need to take high engine load into account to fully close the gap.

WLTC driving conditions is an important step to come closer to what consumers experience



What is engine load?

Imagine driving a car on a flat highway at a constant vehicle speed of 100km/h and at an engine rotation speed of 2500 rounds per minute. Suddenly the road starts rising at a constant gradient of 5%. In order to maintain vehicle speed at 100km/h the driver will have to depress the accelerator pedal. This will trigger the engine management system to increase the mechanical output of the engine (torque) by:

- Injecting more fuel at a more advanced injection timing for a diesel car, and for a petrol car in addition to injecting more fuel, applying a more advanced spark timing
- For the petrol car opening the throttle in the engine's intake to allow more air to flow into the engine

The engine load is directly linked to the mechanical output (torque) of the engine.

In this example the engine speed does not change and will continue revving at 2500 rpm but the engine will be operating at a higher engine load level. Engine load is a very important variable to help mapping of fuel consumption and CO₂ emissions, pollutants, thermal losses absorbed by the cooling system and of the thermal exposure of pollutant control devices in the exhaust.

The current defined RDE boundary conditions for engine speed & load limitations should be stretched to cover all feasible engine speed & load points in order to represent real-world driving conditions and give meaningful information to consumers. ‘Normalising’ the RDE test results, should no longer be allowed. A Not-To-Exceed CO₂ emission limit should be introduced in addition to the CO₂ fleet limit that is equally low for RDE and WLTC testing.

The WLTC laboratory drive profile should remain the benchmark against which CO₂ limitation of the fleet, insurance and taxation are based. In parallel, RDE testing with PEMS test equipment should be applied on the road while expanding the boundary conditions affecting engine load. All realistic conditions should be covered by real-world testing, providing the consumer with much more comprehensive information. This will help to narrow the gap between type-approval results and what the consumer experiences.

The vehicle Labelling Directive should be amended to provide consumers with realistic expectations



The vehicle Labelling Directive² should be amended to provide consumers with realistic expectations, based on WLTC at the point of sale. The labelling information should be made broadly available, for new and second-hand cars.

Methods of communication should be revised to limit cost and maximise impact, bearing in mind that the purchasing decision starts way before consumers arrive at the showroom.

² European Union, http://ec.europa.eu/clima/policies/transport/vehicles/labelling/docs/directive_en.pdf relating to the availability of consumer information on fuel economy and CO₂ emissions in respect of the marketing of new passenger cars", 13 December 1999

The revision should include:

- The harmonisation of the label throughout Europe via an absolute label complemented by colour coded bars; the degree of ambition should be revised periodically to avoid “A++++” categories
- Information should be complemented with expected running costs for 15,000 km and taxation information
- The issue of comparing energy efficiency and running costs for hybrid/plug-in hybrid, battery electric and hydrogen vehicles also needs to be addressed; the current rules surrounding labelling make it difficult to produce a comparison which is simple for consumers to understand and which gives relevant information from the consumer point of view

For 2025, FIA Region I supports an ambitious CO₂ fleet reduction target, continuing the ongoing reduction in recent years. Such a target will contribute to reducing CO₂ emissions and lowering fuel costs for drivers, and will stimulate investments in zero-emission technologies. In addition, we are also in favour of a Not-To-Exceed CO₂ target for the individual vehicle family, based on the latest available evidence and the need to lower CO₂ emissions and fuel costs for consumers.

FIA Region I is strongly in favour of increasing the development and use of fuels derived from sustainable and renewable sources, including for hydrogen and electricity generation and where appropriate, sustainable biofuels produced from energy crops that do not compete with food crops. Emission targets and consumer information should be based on ‘well to wheel’ information.



Long-term (beyond 2030)

A disproportionately high increase of vehicle mass has been observed since the 1980's, with a sustaining increasing trend that adversely affects greenhouse gas emissions and fuel consumption. The average mass of a mid-sized car in the 1980's was in the range of 850 – 950 kg. Today in 2016 the average vehicle mass is 1390 kg. Electric vehicles are even heavier, owing to adding mass of propulsion batteries.

A disproportionately high increase of vehicle mass has been observed since the 1980's with a sustaining increasing trend that adversely affects greenhouse gas emissions and fuel consumption

There is a need to rethink the basic criteria for setting up energy efficiency targets to meet the Commission goal to reduce CO₂ emissions by 60% in 2050 compared to the 1990 level.

Vehicles should gradually return to the average mass typical for the 1980's in an evolutionary process, whether the vehicle is propelled by a combustion engine or equipped with electrified propulsion, but at the same time achieving the highest levels of safety.

This approach is fully technology neutral. Vehicles with all types of propulsion units, be it combustion engine or electrified powertrains alike, will benefit from a significant vehicle mass reduction with respect to improving fuel efficiency and reducing greenhouse gas emissions.

FIA Region I and its Clubs acknowledge that ITS technologies and improved driver skills have an important role to play in delivering overall reductions in transport CO₂ and that they, therefore, will continue to supplement vehicle technology improvements. However, these measures should only be complementary to vehicle regulations and are anticipated to provide societal benefits towards strengthening a sustainable development of the mobility sector.

FIA Region I calls on the legislators to:

- Provide an accurate picture of each technology's overall footprint on the environment, without favouring any, based on well to wheel emissions
- Provide incentives for significant vehicle fleet mass reduction, independent of propulsion technology, in order to reduce driving resistances and implement measures to realise this goal without compromising safety
- Create incentives for a significant increase in engine efficiency, which should be propulsion technology neutral and not only oriented towards stimulating pure electric mobility only



Fédération Internationale de l'Automobile (FIA) Region I office

FIA Region I is a consumer body representing 111 Motoring and Touring Clubs and their 37 million members from across Europe, the Middle East and Africa. The FIA represents the interests of our members as motorists, riders, pedestrians and passengers. FIA Region I is working to ensure safe, affordable, clean and efficient mobility for all. Learn more at www.fiaregion1.com